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UNITED STATES PATENT AND TRADEMARK OFFICE

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STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER
TARAE, CATHERINE MICHELLE

ART UNIT	PAPER NUMBER
3623	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

		Application No.	Applicant(s)
Office Action Summary		09/887,528	EKHAUS ET AL.
		Examiner	**Art Unit**	
		C. Michelle Tarae	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 June 2006</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-19,27 and 35-41</u> is/are pending in the application.

    4a) Of the above claim(s) <u>9,10,19,27 and 35</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-8,11-18 and 36-41</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

1.   The following is a Final Office Action in response to the communication received

on June 27, 2006.

Claims 20-26 and 28-34 have been previously canceled.

Claims 9, 10, 19, 27 and 35 have been previously withdrawn from further

consideration.

Claims 1, 8, 11, 18, 36 and 41 have been amended.

Claims 1-19, 27 and 35-41 are now pending in this application.

Claims 1-8, 11-18 and 36-41 are rejected below.

Response to Amendments

2.   Applicant's amendments to claims 1, 8, 11, 18, 36 and 41 are acknowledged.

Response to Arguments

3.   Applicant's arguments have been fully considered, but are not found persuasive.

On page 10 of the Remarks, Applicant argues that Sheena's profiles that comprise the

rating matrix do not result from binary decisions made by the user, but are built from

profile data entered by the user.

In response to the argument, Examiner respectfully disagrees. As claim 1, for

example, is currently recited, it does not preclude the unary ratings from being formed

from user-entered preference ratings rather than from direct binary input from the user

as nowhere in the claim is it recited that the ratings matrix is a result of binary decisions

directly inputted by the user. In other words, as claim 1 is currently recited, a user may

enter preference ratings in some form other than binary, and then the sparse unary

ratings matrix can be formed from those non-binary user preference ratings. Thus,

Examiner respectfully submits that the features upon which applicant relies are not

recited in the rejected claim(s). Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the claims. See *In re*

Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With regard to the remainder of the arguments on page 11 of the Remarks,

Examiner respectfully submits Applicant's arguments fail to comply with 37

CFR 1.111(b) because they amount to a general allegation that the claims define a

patentable invention without specifically pointing out how the language of the claims

patentably distinguishes them from the references.

Therefore, Applicant's arguments have been fully considered, but are not found

persuasive.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed
publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the
applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1-7, 11-17 and 36-41 are rejected under 35 U.S.C. 102(a,e) as being anticipated by Sheena et al. (U.S. 6,049,777).

As per claim 1, Sheena et al. discloses a method of preparing a recommendation to be accessed by a user comprising the steps of:

providing a sparse unary ratings matrix from the user's selected preferences (col. 5, lines 2-17; col. 11, lines 58-67; Figure 2; The system discloses using a sparse unary ratings matrix based on determining whether or not a user has rated an item, where a rating would be indicated by a positive value and no rating would be indicated by no value. This illustration reads on Applicant's definition of what is meant by "unary data" on page 12 of their Specification, where it states that "unary data indicates a ratings data in which there are only two types of information: positive and no information." Additionally, in col. 8, lines 41-46, Sheena et al. discloses using 1 to indicate that the user has rated the item and 0 to indicate that the user has not rated the item.);

forming a plurality of data structures representing said sparse ratings matrix (col. 3, lines 40-57; col. 4, lines 56-67; The sparse ratings matrix is comprised of sparse vectors that represent item profiles and user profiles, where the item profiles include ratings on the items and the user profiles include users' ratings of the items.);

forming a runtime recommendation model from said plurality of data structures (col. 8, line 41-col. 9, line 56; Several similarity models are used to determine recommendations for users.);

determining a recommendation from said runtime recommendation model in response to a request from a user (col. 8, line 28-col. 9, line 56; Several similarity models are used to determine recommendations for users.); and

providing said recommendation to said user (col. 11, lines 45-55; item 110 in Figures 1 and 3; Recommendations are provided to users.).

As per claim 2, Sheena et al. discloses the method of claim 1, further comprising calculating a unary multiplicity voting recommendation from said runtime recommendation model (col. 8, lines 41-46; col. 11, lines 30-32; col. 16, lines 22-33; Zeros and ones (i.e., unary numbers) are used in the recommendation models.).

As per claim 3, Sheena et al. discloses the method of claim 1, further comprising calculating a non-unary multiplicity voting recommendation from said runtime recommendation model (col. 10, lines 5-15; col. 17, lines 4-6; Numbers between zero and one or greater than one (i.e., binary numbers) are used in the recommendation models.).

As per claim 4, Sheena et al. discloses the method of claim 2, wherein said set step of calculating a unary multiplicity voting recommendation comprises calculating an anonymous recommendation (col. 3, lines 22-23; A user profile may represent more than one user, thus maintaining the anonymity of the individual users.).

As per claim 5, Sheena et al. discloses the method of claim 2, wherein said set step of calculating a unary multiplicity voting recommendation comprises calculating a personalized recommendation (col. 3, lines 36-38; col. 24, lines 58-60).

As per claim 6, Sheena et al. discloses the method of claim 3, wherein said set step of calculating a non-unary multiplicity voting recommendation comprises calculating an anonymous recommendation (col. 3, lines 22-23; A user profile may represent more than one user, thus maintaining the anonymity of the individual users.).

As per claim 7, Sheena et al. discloses the method of claim 3, wherein said set step of calculating a non-unary multiplicity voting recommendation comprises calculating a personalized recommendation (col. 3, lines 36-38; col. 24, lines 58-60).

As per claim 11, Sheena et al. discloses a method of preparing a recommendation to be accessed by a user comprising the steps of:

providing a sparse unary ratings matrix (col. 5, lines 2-17; col. 11, lines 58-67; Figure 2; The system discloses using a sparse unary ratings matrix based on determining whether or not a user has rated an item, where a rating would be indicated by a positive value and no rating would be indicated by no value. This illustration reads on Applicant's definition of what is meant by "unary data" on page 12 of their Specification, where it states that "unary data indicates a ratings data in which there are only two types of information: positive and no information." Additionally, in col. 8, lines 41-46, Sheena et al. discloses using 1 to indicate that the user has rated the item and 0 to indicate that the user has not rated the item.);

providing an update ratings data structure (col. 3, lines 30-33; col. 7, lines 54-65);

forming a plurality of data structures representing said sparse unary ratings matrix (col. 3, lines 40-57; col. 4, lines 56-67; The sparse ratings matrix is comprised of sparse vectors that represent item profiles and user profiles, where the item profiles

include ratings on the items and the user profiles include users' ratings of the items. Additionally, in col. 8, lines 41-46, Sheena et al. discloses using 1 to indicate that the user has rated the item and 0 to indicate that the user has not rated the item.);

forming a runtime recommendation model from said plurality of data structures and said update ratings data structure (col. 8, line 41-col. 9, line 56; Several similarity models are used to determine recommendations for users.);

determining a recommendation from said runtime recommendation model in response to a request from a user (col. 8, line 28-col. 9, line 56; Several similarity models are used to determine recommendations for users.); and

providing said recommendation to said user (col. 11, lines 45-55; item 110 in Figures 1 and 3; Recommendations are provided to users.).

Claims 12-17 and 36-41 recite subject matter similar to the limitations already rejected above in claims 1-7 and 11. Therefore, claims 12-17 and 36-41 are rejected on the same basis as claims 1-7 and 11 above.

Additionally, with regard to independent claims 36 and 41, Sheena et al. discloses applying the sparse vectors/arrays (i.e., the user profiles and the item profiles) to several numbers of recommendation models that use zero and non-zero entries, thereby using a first recommendation model and a second recommendation model (col. 3, lines 34-57; col. 19, lines 50-50; col. 20).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Sheena et al. (U.S. 6,049,777) and Schwinger, Julian, "The Geometry of Quantum

States," Feb. 15, 1960.

As per claim 8, Sheena et al. discloses wherein said step of forming a runtime

recommendation model from said plurality of data structures comprises: mapping each

rated item in the sparse unary ratings matrix to a category (col. 15, lines 3-11 and 18-

23).

Sheena et al. does not expressly disclose wherein said mapping step comprises

multiplying said unary ratings matrices by a mappings matrix between said unary ratings

matrices and a plurality of categories.

Schwinger discloses multiplying matrices by a mappings matrix in order to map

the matrices to that matrix (middle of page 260, "The product of an operator with a

vector expresses a mapping upon another vector in the same space..."). At the time of

the invention, it would have been obvious to a person of ordinary skill in the art to

modify Sheena et al. to use matrix multiplication as disclosed in Schwinger to map the

rated items in the sparse unary ratings matrix to a category because doing so is a

standard way in the art to map matrix data and also, because using a mathematical

formula to map the matrix provides an efficient and effective means for mapping data,

thereby enhancing Sheena et al.'s current means of mapping data.

Claim 18 recites subject matter similar to the limitations already rejected above in

claim 8. Therefore, claim 18 is rejected on the same basis as claim 8 above.

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

- Barbir et al. "Fast Structured Sparse Unary Matrix Operations on Dense Systolic

  Arrays," *IEEE*, 1991, discusses structured sparse unary matrix operations;

- Marcel et al. "Formal Choice Models in Marketing," *Marketing Science*, 1983,

  discusses using vectors and matrices in consumer marketing preferences.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to C. Michelle Tarae whose telephone number is 571-272-

6727. The examiner can normally be reached Monday – Friday from 8:30am to

5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Tariq Hafiz, can be reached at 571-272-6729.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

C. MICHELLE TARAE
PRIMARY EXAMINER

June 13, 2007